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CLASP (Classification and Assignment within PRIDE), the optimal-sequential assignment model currently used to assign recruit applicants to entry-level Navy ratings, lacks the ability to assess the quality of personnel assignments from a Navy attrition standpoint. Thus, this research was conducted to (1) develop an attrition component for use in the CLASP model, and (2) evaluate its performance characteristics. Judgmental data obtained from subject matter experts were used to determine a mathematical representation of the policy underlying decision-makers' judgments, hereafter called the

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attrition component. A simulation program was developed to generate personnel assignments to ratings using either of two models: one including only the existing five CLASP components, and the other also including the attrition component. Performance comparisons of the two models showed that (1) they were virtually identical with respect to assignment efficiency, and (2) the augmented model yielded higher average utility values.

NPRDC TR 84-40

MAY 1984

CLASSIFICATION AND ASSIGNMENT WITHIN PRIDE (CLASP) SYSTEM: DEVELOPMENT AND EVALUATION OF AN ATTRITION COMPONENT

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NPRDC TR 84-40

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CLASSIFICATION AND ASSIGNMENT WITHIN PRIDE (CLASP) SYSTEM: DEVELOPMENT AND EVALUATION OF AN ATTRITION COMPONENT

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FOREWORD

The purpose of this research, which was conducted under project Z1167-PN.02 (Computer-assisted Testing, Counseling, and Assignment of Recruits) was to develop and test an attrition utility component for the computerized personnel assignment system known as CLASP (Classification and Assignment Within PRIDE).

Appreciation is expressed to RADM Freeman, USN (Ret.), (CNRC-013), LCDR Biegler (NMPC-481), and LCDR Sheehan (NMPC-482) for many helpful discussions concerning policy issues. An essential contribution to the success of this project was provided by LCDR P. Griffin (OPNAV-13) and Professors G. Thomas, K. Euske, and R. Elster of the Naval Postgraduate School, Monterey, who conducted research that resulted in the derivation of the attrition severity index (ASI).

The results are intended for use by Naval Military Personnel Command and Navy Recruiting Command CLASP program managers, as well as other Department of Defense agencies concerned with personnel allocation problems.

J. W. RENARD
CAPT, U.S. Navy
Commanding Officer

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SUMMARY

Problem

CLASP (Classification and Assignment within PRIDE), the optimal-sequential assignment model currently used to assign recruit applicants to entry-level Navy ratings, lacks the ability to assess the quality of personnel assignments from a Navy attrition standpoint. Accordingly, the Naval Military Personnel Command (NMPC) and the Office of the Chief of Naval Operations (OPNAV) (Code 135) requested the Navy Personnel Research and Development Center to develop an attrition component to reflect the likelihood that a recruit applicant will attrite during his or her first term of naval service.

Objectives

The objectives of this research were to (1) develop an attrition component for use in the CLASP model, and (2) evaluate its performance characteristics.

Approach

Judgmental data concerning the success chances of potential recruit/rating assignments were obtained from officers within NMPC and the Navy Recruiting Command (NRC). The data were used to determine a mathematical representation of the policy underlying decision-makers' judgments. Hereafter, this mathematical formulation is called the attrition component.

A simulation program was developed to generate personnel assignments to ratings using either of two models: one including only the existing five CLASP components, and the other also including the attrition component. The performance of the two models were compared.

Results

Comparison results showed that (1) the two models were virtually identical with respect to assignment efficiency, and (2) the augmented model yielded higher average utility values.

Recommendations

It is recommended that the Naval Military Personnel Command (NMPC-48):

1. Incorporate the attrition component within the operational CLASP model.

2. Set component weights for the augmented CLASP model to the following values:

   - School success - 0.26.
   - Aptitude/complexity - 0.35.
   - Priority/preference - 0.14.
   - Minority fill-rate - 0.08.
   - Fraction fill-rate - 0.07.
   - Attrition - 0.10.

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INTRODUCTION

Problem

In June 1981, the manner in which recruit applicants were classified and assigned to Navy ratings at military enlisted processing stations (MEPS) was fundamentally changed. The first-come, first-served procedure that had governed the allocation of jobs and associated training opportunities was abandoned in favor of a computerized process that generated a limited number of optimal job options based on Navy requirements and personnel characteristics. The new system, called CLASP (for Classification and Assignment within PRIDE (Personalized Recruiting for Immediate and Delayed Enlistment)) (Kroeker and Rafacz, 1983), has increased the quality of person-rating matches in accordance with the objectives expressed by Navy decision makers.

The model that was implemented consists of five components, which address school success prediction, technical aptitude/rating complexity, Navy priority/individual preference, minority fill-rate, and fraction fill-rate. Since none of these components addresses the attrition problem, the Naval Military Personnel Command (NMPC) and the Office of the Chief of Naval Operations (OPNAV) (Code 135) requested the Navy Personnel Research and Development Center to develop an attrition component to reflect the likelihood that a recruit applicant will attrite during his or her first term of naval service.

Objectives

The objectives of this research were to (1) develop an attrition component for use in the CLASP model, and (2) evaluate its performance characteristics.

APPROACH

After discussions with NMPC and Navy Recruiting Command (NRC) personnel, it was decided that:

1. The component should yield a numerical person-rating match measure and should consist of a utility function that combines a recruit's survival chances and a rating's importance to the Navy (Thomas, Elster, Euske, & Griffin, in press).

2. The component's form and its method of operation should be compatible with the five operational CLASP components.

3. The weight of the attrition component within the new assignment model should not exceed the individual weights for the school success, aptitude/complexity, and priority/preference components.

Judgmental Data Collection and Analysis

To help clarify the functional form of the component, nine officers within NMPC and NRC were asked to estimate success chances for recruits within pairwise attribute configurations (Kroeker, 1982). The utility of a given person-rating match to the Navy would be reflected in the magnitude of the estimated success probability. The judgmental data were used to determine a mathematical representation of the policy underlying decision-makers' judgments using Ward's (1977) policy specifying/capturing programs.

Performance Assessment of Two Models

A simulation program was developed to generate personnel assignments to ratings using either of two models: one including only the five components in the current CLASP system; and the other, also including the attrition component. Hereafter, the two models will be called Models A and B respectively.

The performance of the two models was compared, using three criterion measures: (1) their decision index (DI) mean scores,[1] (2) the number of persons assigned under each model, and (3) the rate of DI mean convergence in the simulation process. The attrition component was evaluated in terms of its contribution to system performance.

Sample

The data used for the simulated assignment process was obtained from files containing the records of 16,025 school-eligible male recruits who entered the Navy between 1 October 1981 and 31 March 1982.

RESULTS AND DISCUSSION

Judgmental Data

Two variables are instrumental in the determination of utility: (1) a job characteristic measure and (2) a person characteristic measure.

The job property measure is called the attrition severity index (ASI) (Thomas et al., in press), which integrates personnel loss, cost priority, and personnel requirements information for Navy ratings. Navy personnel data bases (e.g., Navy Enlisted Master File) were used to determine five rating scales--survival, replacement cost, shortage of requirements, excess of requirements, and priority. A multiplicative, multiattribute model was used to combine the scales to form ASIs for 92 Navy ratings (see appendix).

The person characteristic measure is obtained by using the Success Chances of Recruits Entering the Navy (SCREEN) table (Lockman, 1977), which recruiters use to assign a probability of a recruit applicant's completing the first term of service. This measure, which is based on information concerning the prospective recruit's education level, mental group, and age, reflects the level of first-term attrition risk the Navy incurs in enlisting a given person.

Three levels of attrition severity and three levels of attrition risk were identified, and estimated utility values were produced for each of the nine attribute pairs. Results, presented in Table 1, show that utility increases monotonically with decreasing risk level for moderate and high attrition severity levels. The data profile within the lowest attrition severity level is less clear. If low and medium risk levels are pooled within the lowest attrition severity level, the trend showing increased utility with decreasing risk level is also observed.

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[1]A DI score reflects the degree of expected proficiency resulting from a particular person-rating match (Ward, 1959).

Table 1

Estimated Utility for Nine Attribute Pairs

Attrition Severity Level	Risk level High	Medium	Low
High	.17	.61	.84
Medium	.42	.58	.66
Low	.44	.57	.54

Attrition Function

The policy function shown in Figure 1 represents the interaction of the two variables. A low-risk candidate assigned to a rating described by a high ASI value represents a desirable Navy outcome, whereas a high-risk candidate assigned to the same rating represents an undesirable outcome. From the Navy decision maker's point of view, the consequences of assigning high- and low-risk persons to a rating described by a low ASI value are more similar than in the previous comparison. At present, recruiters use the risk variable (as measured by the SCREEN table) for selection but not for assignment. The attrition component represents the first application of the risk variable for classification purposes.

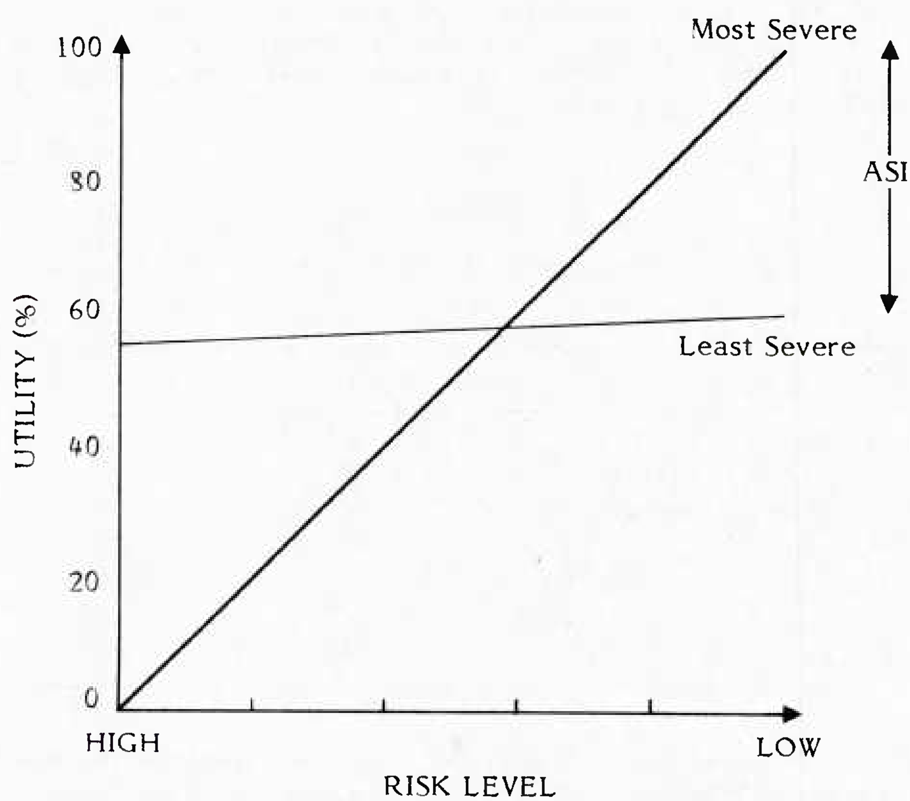


Figure 1. Person-rating match utility as a function of risk level and ASI.

The component's practical effects are discussed below. Maximum separation between recommended ratings occurs for persons judged to be either high- or low-risk. The effects are much less pronounced for applicants who are characterized by a medium-risk level. The function influences the person-rating match process by differentiating among persons based on risk level. The effect is most pronounced for a rating whose attrition is considered severe. Low-risk (attrition) persons are more likely to be assigned to such a rating than are high-risk personnel.

Given the ASI value for a specific rating and the risk value associated with a given person, the attrition utility corresponding to the person-rating match is obtained from the following equation:

$$B_{ij} = -(0.7857)(C_j - 80) + (3.846)(D_i - 70) + (0.0522)(C_j - 80)(D_i - 70) \qquad (1)$$

where:

B_{ij} is the utility associated with placing person i in rating j,

C_j is the ASI value corresponding to the jth rating, and

D_i is the risk value associated with person i.

Simulation Procedure

As indicated previously, Model A consists of the original five CLASP components (Kroeker and Rafacz, 1983). Model B contains the attrition component in addition to those components. Table 2 provides the weights used in the models to determine composite utility for a given person-rating match.

Table 2

Composite Utility Weights

Component	Model A	Model B
School success prediction	0.30	0.26
Technical aptitude/rating complexity	0.40	0.35
Navy priority/individual preference	0.15	0.14
Minority fill-rate	0.08	0.08
Fraction fill-rate	0.07	0.07
Attrition	--	0.10
Total	1.00	1.00

The simulation program used in this study, which was described by Folchi, Rafacz, Kroeker, and Warner (1982), uses NRC computer tapes containing data about recruit

applicants. The program simulates the production of rating assignments. The assignment algorithm and the utility components are identical to those used in the operational CLASP system.

The simulation program depends upon utility calculations contributed by each component, which it accepts in the form of standardized values with a mean of 50 and a standard deviation (SD) of 10. To transform the B_{ij} attrition utility values in Equation 1 to the appropriate metric, the parameters shown in Table 3 are employed.

Table 3

Attrition Utility Statistics

Data Set	B_{ij} Mean	B_{ij} SD
Oct 1981	57.78	11.68
Nov 1981	56.67	12.56
Dec 1981	56.87	11.71
Jan 1982	57.12	10.96
Feb 1982	56.09	11.25
Mar 1982	55.61	11.56

Comparison of Model Performance

Decision Index (DI) Means

FORTRAN simulation programs were written for both models. Data files containing the records of males entering the advanced electronics (AE), advanced technical (AT), nuclear (NF), five-year obligation (5YO), and school-guarantee (SG) fields during the period from 1 October 1981 through 31 March 1982 were used as input information for both model performance simulations.

The resulting average DI means for the two models are presented in Table 4. For example, for Model A, the six monthly simulation runs for the AB rating produced six optimal DI values whose mean was 5201, compared to 5185 for Model B. The average difference in DI between the two models was 23.4, with Model B values being the higher of the two. The slight difference in elevation appears to have no consistent effect on overall system operation.

The largest DI mean difference for any rating was 122, which is small compared to the SD measures for Models A and B (294.9 and 260.9 respectively). The correlation between the two sets of DI means was 0.999.

Number of Persons Assigned

Models A and B were also compared based on the numbers of persons that could be assigned within the existing constraints. In any assignment simulation of persons to jobs

Table 4

Decision Index (DI) Means for Two Assignment Models

Rating[a]	DI Mean Model A	DI Mean Model B	Rating[a]	DI Mean Model A	DI Mean Model B
AB	5,201	5,185	GS AT	4,420	4,500
AC	4,947	4,970	HM	5,171	5,147
AD	5,281	5,245	HM AT	4,461	4,550
AE	4,936	4,966	HT	5,100	5,094
AG	4,697	4,737	HT AT	4,615	4,680
AK	4,906	4,926	IC	5,163	5,154
AM	5,305	5,257	IC AT	4,778	4,793
AO	5,039	5,038	IC NF	4,725	4,768
AQ	4,982	4,979	IM	4,567	4,621
AQ AE	4,911	4,919	IS	4,624	4,673
ASE	4,990	4,999	JO	4,427	4,503
ASM	4,942	4,956	ML	4,837	4,863
AT	4,320	4,417	MM	5,398	5,398
AT AE	4,082	4,204	MM NF	4,685	4,705
AW	4,413	4,485	MN	4,954	4,971
AX	4,489	4,565	MR	4,735	4,778
AX AE	4,334	4,420	MS	5,259	5,242
AZ	4,939	4,959	OM	4,494	4,556
BT	5,267	5,240	OS	5,313	5,284
BT AT	4,956	4,981	OT	4,754	4,787
BU	4,980	4,983	PC	5,381	5,338
CE	4,940	4,941	PH	4,918	4,919
CM	5,000	5,010	PM	4,860	4,884
CTA	4,854	4,877	PN	5,028	5,029
CTI1	4,924	4,944	PR	5,251	5,222
CTI2	4,895	4,905	QM	5,157	5,150
CTM AE	4,772	4,797	RM	5,335	5,313
CTO	4,969	4,987	RM AT	4,607	4,638
CTRT	5,205	5,198	RP	4,924	4,951
DK	5,000	5,018	SH	5,099	5,091
DP	4,896	4,935	SK	5,113	5,119
DS AE	4,242	4,341	SM	5,203	5,170
DT	5,072	5,075	STG	4,608	4,664
EA	4,565	4,621	STG AE	4,885	4,951
EM	5,116	5,109	STS	4,838	4,879
EM NF	4,506	4,568	STS AE	4,776	4,840
EN	5,144	5,133	SW	4,971	4,975
EO	5,081	5,075	SWS AE	5,111	5,129
ET	4,477	4,545	TD	4,538	4,600
ET AE	4,486	4,541	TM	5,166	5,151
ET NF	4,335	4,407	TMS	5,156	5,158
EW	4,649	4,701	TMT	5,089	5,099
EW AE	4,564	4,632	UFTG AE	4,550	4,629
FT	4,558	4,619	UT	5,070	5,073
FT AE	4,434	4,495	YN	4,931	4,942
GM	5,144	5,135	FS	5,080	5,062
GMT	5,072	5,070	SS	5,080	5,074
	Grand Mean			4,872.6	4,896.0
	Standard Deviation			294.0	260.9

[a]Titles for these ratings are provided in the appendix.

within a given shipping month, fewer than 1 percent cannot be assigned because of constraints such as minimum training school qualification scores.

Table 5, which displays the number of persons assigned under each model for each of the six data sets, shows that their assignment efficiency is virtually identical.

Table 5

Number of Persons Assigned Under Models A and B

Data Set	Persons Assigned		
	Model A	Model B	Total Shipping
Oct 1981	2,708	2,712	2,741
Nov 1981	2,973	2,968	2,984
Dec 1981	2,067	2,068	2,094
Jan 1982	2,415	2,419	2,442
Feb 1982	2,825	2,827	2,846
Mar 1982	2,893	2,892	2,918
Total	15,881	15,886	16,025

Rate of DI Mean Convergence

Finally, the two models were compared on the rate of DI mean convergence across iterations in the simulation process. The process usually requires eight complete repetitions (iterations) of recruit assignments. It begins with a DI mean value of 5000 used for each rating (for details, see Folchi et al., 1982). As each iteration is completed, the resulting DI means are used as input for the next iteration. During the first few iterations, large differences between DI means are observed for a typical rating. Whenever DI means change very little from one iteration to another (e.g., less than 10 points), the process is said to converge. Details concerning the convergence criterion are found in Folchi et al. (1982).

The values of the DI means affect subsequent personnel assignments; therefore, prior to convergence, individuals will most likely be assigned to different ratings when different iterations are examined. The practical effect of DI mean convergence is that most persons will be assigned to the same rating from one iteration to another.

A mean square statistic M, measuring average squared deviations between DI means on successive iterations, was defined in Folchi et al. (1982). Average M values have been calculated for each model by using the individual M values associated with each of the last three iterations for each of the six data sets. The averages of the 18 values for Models A and B are 148 and 156 respectively. The difference between the two is neither practically nor statistically significant ($\alpha = 0.10$). The data on which these calculations are based are presented in Table 6.

Table 6

Mean Squared Deviation Statistic M

Data Set	Iteration 1	2	3	4	5	6	7	8
				Model A				
Oct 1981	83,387	157,246	687	324	160	114	77	75
Nov 1981	75,463	160,555	1,026	277	125	73	68	39
Dec 1981	83,895	161,891	861	295	159	115	63	72
Jan 1982	83,096	167,935	861	335	333	274	370	356
Feb 1982	79,963	161,382	816	271	68	73	57	63
Mar 1982	76,827	171,344	1,111	549	261	265	266	242
Average	80,438	163,392	894	342	184	152	150	141
				Model B				
Oct 1981	65,021	117,246	746	213	157	79	83	103
Nov 1981	58,441	124,620	1,079	415	260	171	215	195
Dec 1981	64,036	121,844	781	377	141	170	144	84
Jan 1982	65,233	129,981	1,058	402	193	156	162	171
Feb 1982	62,196	120,943	917	360	153	120	138	142
Mar 1982	59,583	127,317	1,227	591	181	185	170	319
Average	62,418	123,658	968	393	181	147	152	169

In the assignment simulations, the two models display similar convergence characteristics, as showed by the average M value at each model iteration. The similarity between the two models is more apparent when these average M values are transformed by means of a natural logarithm transformation ($\ln \bar{M}$) and the results are plotted against iteration number--see Figure 2.

Attrition Utility

The two models were also compared on the basis of average attrition utility, as calculated by Equation 1. Results are shown in Table 7. A comparison of the overall means associated with the two models indicates a small improvement in allocation utility when Model B is employed. Although it is difficult to ascertain the significance of this small improvement, it is clear that the difference is in the right direction, which is encouraging to decision makers who wish to broaden the decision criterion base of the allocation procedure.

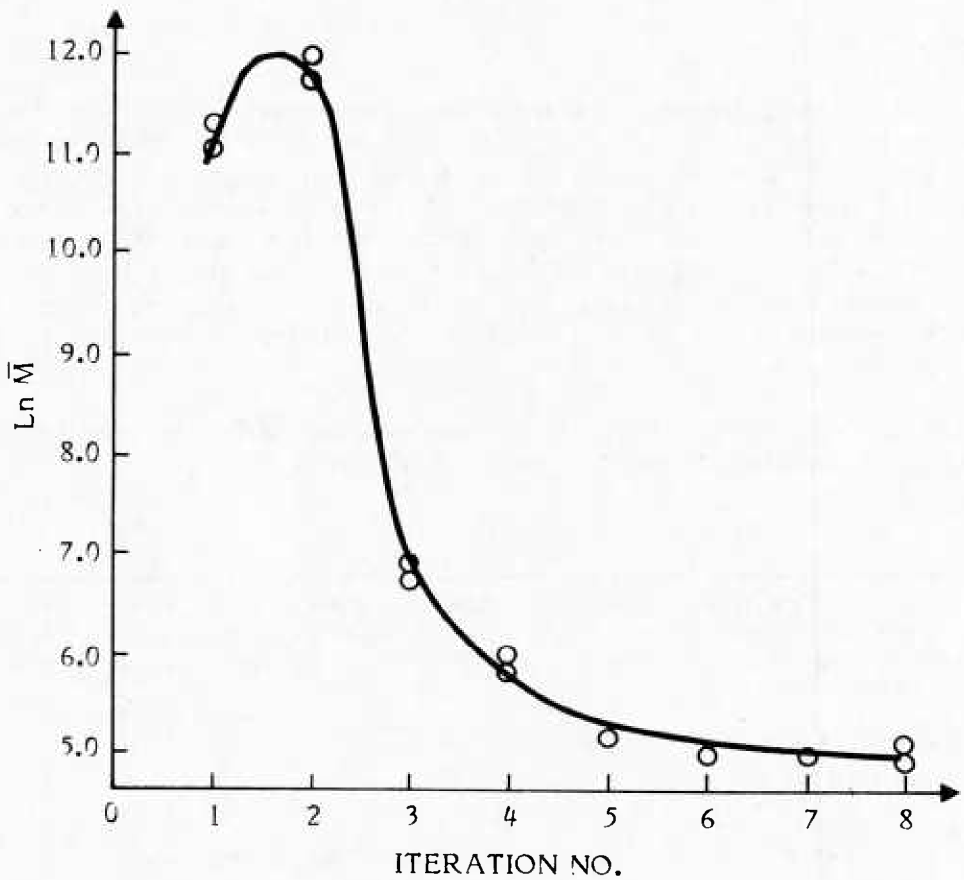


Figure 2. Ln $\bar{M}$ vs. interation number for Models A and B.

Table 7

Average Attrition Utility (B_{ij})

Data Set	Model A	Model B
Oct 1981	57.9	59.4
Nov 1981	56.2	58.0
Dec 1981	56.8	58.5
Jan 1982	57.1	58.5
Feb 1982	55.9	57.5
Mar 1982	54.8	56.7
Overall Mean	56.4	58.1

Summary

In summary, the attrition component has performed as well in simulations as anticipated during the design phase. CLASP Model B, which includes the attrition component, produced DI means within the same operating range as Model A, now in daily use throughout the nation. The assignment efficiency of Model B, as measured by the percentage of persons assigned under simulation conditions, was 99.1 percent, which is virtually identical to the assignment efficiency under Model A. In addition, simulation convergence was as rapid under Model B as under Model A. Finally, Model B achieves a superior personnel allocation, as measured by the attrition goodness-of-fit index, B_{ij}, defined in Equation 1.

The FORTRAN code for the attrition component subroutine is provided in Figure 3; and the flow chart for the attrition component, in Figure 4.

The following FORTRAN code calculates the attrition component payoff values for each rating and computes the composite payoff values for each rating. In the simulation program, it is located immediately following the code that calculates the payoffs for the other five components.

```
C     Calculate Attrition Component
      S70 = SCREEN - 70.0
      DO 635 K = 1 , NRAT
      A80 = ASI (K) - 80.0
      ATR = -.7857E+00 * A80 + .3846E+01 * S70 + .5220E-01 * A80 * S70
      ATRPAY(K) = 50.0 + 10.0 * (ATR - ATRM)/ATRSD
      IF (ATRPAY (K) .GT. 80.0) ATRPAY (K) = 80.0
      If (ATRPAY (K) .LT. 20.0) ATRPAY (K) = 20.0
635 Continue
C     End calculation of components - begin processing of composites and DI.
C
      DO 655 K = 1 , NRAT
      COMPAY (K) = WT(1) * SSPAY (K) + WT(2) * APTDIF (K) + WT(3) * PNNP (K) +
WT(4) * PMINF (K) + WT(5) * PFF (K) + WT(6) * ATRPAY (K)
```

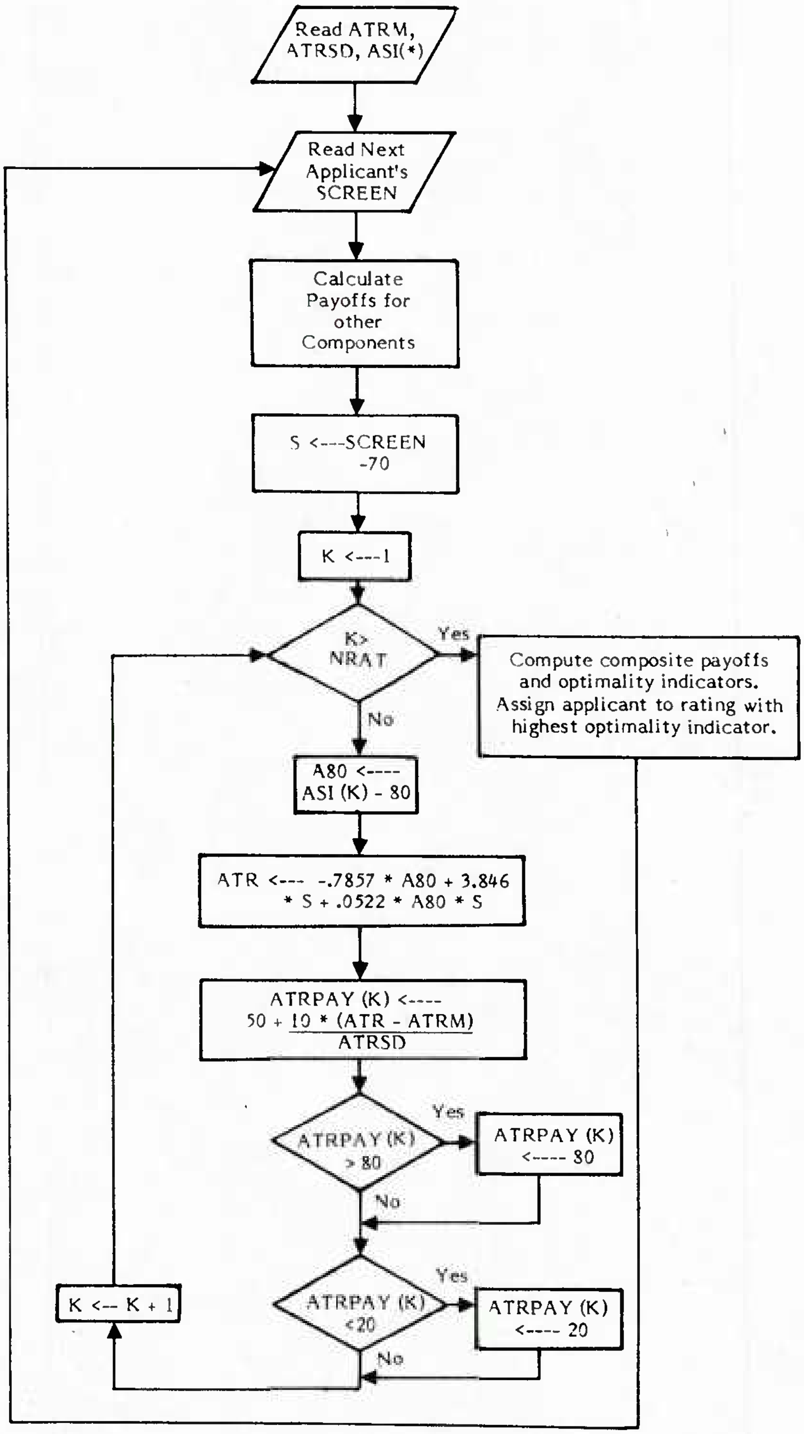
Figure 3. FORTRAN code for attrition component subroutine.

RECOMMENDATIONS

It is recommended that the NMPC-48:

1. Incorporate the attrition component within the operational CLASP model.

2. Set component weights for the augmented CLASP model to the values for Model B shown in Table 2.



Abbreviations:

ATRM	=	Overall attrition utility mean.
ATRSD	=	Overall attrition utility standard deviation.
ATR	=	Attrition utility for applicant being assigned.
ASI (K)	=	Attrition severity index for Kth rating.
NRAT	=	Number of ratings an applicant can be considered for.
SCREEN	=	SCREEN score of applicant being considered.
ATRPAY(K)	=	Calculated attrition component payoff value for the Kth rating for the applicant being considered.

Figure 4. Flow chart for attrition component.

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APPENDIX

ATTRITION SEVERITY INDICES (ASIs) FOR 92 NAVY RATINGS

Attrition Severity Indices (ASIs) for 92 Navy Ratings

Rating Title	Abbreviation	Attrition Severity Indices
Aviation boatswain's mate	AB	25
Air traffic controller	AC	17
Aviation machinist's mate	AD	31
Aviation electrician's mate	AE	30
Aerographer's mate	AG	19
Aviation storekeeper	AK	29
Aviation structural mechanic	AM	29
Aviation ordnanceman	AO	37
Aviation fire control technician	AQ	58
Aviation fire control technician, advanced electronics field	AQ AE	34
Aviation support equipment technician (electrical)	ASE	23
Aviation support equipment technician (mechanical)	ASM	19
Aviation electronics technician	AT	45
Avionics electronics technician, advanced electronics field	AT AE	43
Aviation antisubmarine warfare operator	AW	24
Aviation antisubmarine warfare technician	AX	30
Aviation antisubmarine warfare technician, advanced electronics field	AX AE	30
Aviation maintenance administrationman	AZ	27
Boiler technician	BT	63
Boiler technician, advanced technical field	BT AT	41
Builder	BU	22
Construction electrician	CE	20
Construction mechanic	CM	12
Cryptologic technician (administration branch)	CTA	29
Cryptologic technician (interpretive branch)	CTI1	21
Cryptologic technician (interpretive branch)	CTI2	22
Cryptologic technician (maintenance branch), advanced electronics field	CTM AE	24
Cryptologic technician (communications branch)	CTO	31
Cryptologic technician (collection branch), technical field	CTRT	32
Disbursing clerk	DK	28
Data processing technician	DP	23
Data systems technician, advanced electronics field	DS AE	17
Dental technician	DT	80
Engineering aid	EA	20
Electrician's mate	EM	48
Engineman	EN	31
Equipment operator	EO	24
Electronics technician	ET	56
Electronics technician, advanced electronics field	ET AE	49
Electronics warfare technician	EW	43
Electronics warfare technician, advanced electronics field	EW AE	33
Fire control technician	FT	43
Fire control technician, advanced electronics field	FT AE	47
Gunner's mate	GM	41
Gunner's mate (technician)	GMT	31
Gas turbine system technician, advanced technical field	GS AT	12
Hospital corpsman	HM	73

Attrition Severity Indices (ASIs) for 92 Navy Ratings (Continued)

Rating Title	Abbreviation	Attrition Severity Indices
Hospital corpsman, advanced technical field	HM AT	30
Hull maintenance technician	HT	42
Hull maintenance technician, advanced technical field	HT AT	21
Interior communications electrician	IC	41
Interior communications electrician, advanced technical field	IC AT	41
Instrumentman	IM	25
Intelligence specialist	IS	21
Journalist	JO	20
Molder	ML	15
Machinist's mate	MM	80
Machinist's mate, nuclear field	MM NF	80
Mineman	MN	25
Machinery repairman	MR	20
Mess management specialist	MS	67
Nuclear field	NF	53
Opticalman	OM	33
Operations specialist	OS	74
Ocean systems technician	OT	45
Postal clerk	PC	32
Photographer's mate	PH	11
Patternmaker	PM	10
Personnelman	PN	37
Aircrew survival equipmentman	PR	37
Quartermaster	QM	34
Radioman	RM	70
Radioman, advanced electronics field	RM AE	70
Religious program specialist	RP	19
Ship's serviceman	SH	52
Storekeeper	SK	32
Signalman	SM	63
Sonar technician (submarine)	STS	37
Sonar technician (submarine), advanced electronics field	STS AE	37
Sonar technician (surface)	STG	36
Sonar technician (surface), advanced electronics field	STG AE	36
Steelworker	SW	18
Strategic weapons system electronics (Polaris-Poseidon electronics), advanced electronics field	SWS AE	47
Tradevman[a]	TD	33
Torpedoman's mate	TM	46
Torpedoman's mate (submarine)	TMS	33
Torpedoman's mate (technician)	TMT	38
Utilitiesman	UT	21
Yeoman	YN	43
Underwater fire control technician (advanced electronics field	UFTG AE	36
Fireman, subfarer	FS	35
Seaman, subfarer	SS	35
Aviation support equipment technician (electrical)	ASE	23

[a]Being phased out.

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